

Safety Instrumented Systems (SIS)

IEC 61511 SIS site survey and documentation audit



Is your SIS basis of safety documentation and supporting technical specifications for compliance with IEC 61511 good practice expectations available and up to date?

Background to the challenges faced

The focus for delivery of 'documented and written evidence' is via the asset owner company's internal Functional Safety Management (FSM) processes and, in particular, the SIS 'operational' lifecycle phases. Such systems need to address how the original Safety Requirements Specification (SRS) of the SIS is being managed over time to ensure that safety performance and documented evidence for management of change is reflecting the current hardware and software installation.

Asset owner organisations have streamlined their site-based engineering resources over recent years and now the challenge for the responsible managers and engineers is to upkeep essential information relating to areas such as:

- Revision control and serialization status
- Configuration management status
- Change and modification management
- Supporting documentation to reflect the 'as operational' status of the SIS

Ensuring that the technical documentation is current and up-to-date forms part of the asset owner's obligations to undertake a 'systematic and independent examination to determine whether the procedures specific to the functional safety requirements comply with the planned

arrangements, are implemented effectively and are suitable to achieve the specified objectives'. The objective in this case is to show evidence in accordance with IEC 61511.

The requirements for supporting documentation often span many different engineering disciplines. Essential management and technical information in support of the SIS during the operations, maintenance and modification phases of the safety lifecycle can often be mislaid.

It might be that the documents have been pending formal revision, update and re-issue over many months. In some circumstances documents are not reviewed and revised due to other operational priorities and/or availability of suitable budgets and resources. Documents can also be lost in the event of key resource changes or following the impact of merger / acquisition transfers.

It also follows that the inability to identify and demonstrate the current status and supporting documentation content to both internal and external stakeholders could in itself identify significant weaknesses in the relevant information currently available to satisfy the requirements of normative legislation or industry good practice.

The ABB approach

The objective of the Independent ABB SIS site survey and documentation audit is to identify and 'map' the current differences between the existing company functional safety-related O&M procedures and systems and SIS hardware and software as found at site. It identifies potential misalignment of supporting technical or management documentation for hardware and software and what is required for management of functional safety as defined in IEC 61511 Part 1, clause 5.

The existing SIS and individual SIFs and their supporting documentation is assessed using a proven audit review methodology with an audit assessment report. The report compares the existing functional safety-related management procedure(s) and available technical documentation for the SIFs under review with the clauses contained within the safety standards for normal work flow activities. The report identifies any gaps in required key compliance requirements arising out of the currently available documented evidence.

Primarily, the audit findings are used to arrive at a set of conclusions about whether the existing SIFs and the supporting documentation for operations, maintenance and modifications can be viewed as 'current' in terms of the SIS installed base. The Audit reveals too whether the SIS and documentation is sufficiently robust in nature to meet FSM needs and expected risk reduction requirements.

Benefits of a SIS site survey and documentation audit

ABB offers its clients extensive knowledge of SIS, the legislation concerned, the regulatory perspective and also the standards / criteria against which a company / system is measured.

- The audit assists with the requirements of 'periodic reviews' of the status of the SIS and the operational information to support its revision control and continued service
- A site survey and documentation review of the asset owner's current SIS can provide justification for existing arrangements and help devise an improvement plan around information gaps and so align with the relevant safety standards
- The individual SIF information gathered can be further used by the asset owner to support SIL verification against defined SRS
- Action shows a pro-active attitude which is expected by the authorities, public and workforce. It shows too the company's 'demonstrable' risk management arguments
- Knowing in advance that gaps in information exist for the asset owner's operational SIS the document audit and site survey aids in planning and avoids 'surprises' when considering the ongoing sustainability of the operational basis of safety

ABB FSM Technical Authority Services

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For further information please contact:

ABB FSM Technical Authority

Howard Road, Eaton Socon, St Neots
Cambridgeshire, PE19 8EU
Phone: +44 (0)1480 475321
E-Mail: oilandgas@gb.abb.com

abb.com/oilandgas

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